Triennial Review Rulemaking
Proposed 2004 Rulemaking Issues

The following are a list of proposed rulemaking issues for consideration for the next set of "fast track" issues. We are soliciting other issues in Article 2 and 5 that should be considered as part of this rulemaking.

Article 2 candidate changes that are ready for discussion

Aquatic Life Methodologies

- IDEM currently utilizes two different methodologies for calculating aquatic life criteria, one for areas inside the Great Lakes System and another for downstate outside the Great Lakes System
- Downstate aquatic life methodologies were adopted during the 1990 rulemaking
- Downstate aquatic life methodologies required toxicity data for 5 families and 1 acute-to-chronic ratio
- Downstate methodologies were a downsized version of the USEPA 1985 national methodology which required toxicity data for 8 families and 3 acute-to-chronic ratios (if 8 families of acute data and three acute-to-chronic ratios are available both the national methodology and downstate methodology will result in the same Tier I criteria)
- The 1990 downstate Tier II methodology was taken from Michigan DEQ
- In 1997 Indiana adopted the Great Lakes Guidance which contained EPA's national methodology and a new Tier II methodology
- A comparison of the EPA national method and the IDEM 1990 method follows:

Methodology Requirements	**Methodology for Waters Outside the Great Lakes System**	**Methodology for Waters Inside the Great Lakes System**
Number of families for Tier I criterion	5 (Not consistent with EPA's 1985 guidance)	8
Number of acute-chronic ratios for Tier I criterion	1 (Not consistent with EPA's 1985 guidance)	3
Minimum number of families for Tier II value	2 (Daphnid and either rainbow trout, fathead minnow or bluegill)	1 (Daphnid)
Tier II final acute value/ secondary acute value calculation. (The acute criterion (value) is calculated by dividing the Final Acute Value (Secondary Acute Value) by 2.)	Divide lowest LC_{50} by either 5 (rainbow trout in the database) or 10 (rainbow trout not in the database)	Divide lowest LC_{50} by the SAF. The SAF can range from 21.9 (only 1 family represented) to 4.3 (seven out of eight families represented)
Tier II chronic value calculation (no ACRs)	Divide FAV by 45	Divide SAV by geometric mean of measured ACRs and enough default ACRs of 18 to provide 3 ACRs

- The downstate method does not require toxicity data from many of the families of organisms that EPA considered to be sensitive to toxic pollutants
- The downstate method increases the probability that a Tier I criterion could be under-protective by not requiring data for more sensitive species
- Using only a single acute-to-chronic ratio for determining the chronic criterion is highly questionable since this does not capture any variability
- In the 1999 draft rules IDEM proposed to adopt the national aquatic life methodology and the Great Lakes Guidance Tier II methodology statewide. These methodologies represent the best science currently available and should be proposed again for adoption into state rules.

Human Health Methodologies

- IDEM currently utilizes two different methodologies for calculating human health criteria, one for areas inside the Great Lakes System and another for downstate outside the Great Lakes System
- The downstate methodologies were based on the 1980 USEPA national human health methodology, adopted into Indiana rules in 1990
- The methodologies used in the Great Lakes System came from the Great Lakes Guidance and were adopted by IDEM in 1997
- In 2000 USEPA released updated national human health methodologies which were very similar to the methodologies used in the Great Lakes Guidance with some improvements/updates
- The 2000 methods allow greater flexibility in calculating criteria (either more or less stringent) than the Great Lakes Guidance methods; new food chain multiplier tables were developed and included so that the BAF methodologies could be used nationwide; the relative source contribution, which was also used in the Great Lakes Guidance methodologies, was lowered from 0.8 to 0.2; the default fish consumption value was raised from 6.5 g/day to 17.5 g/day
- All future EPA human health criteria will be calculated using the 2000 methodologies
- Although the EPA 2000 human health methodology has a national default fish consumption value, IDEM contracted with Purdue University staff in 1998 to have a fish consumption study conducted to determine an Indiana specific default value. The data are available for determination of a new value.
- The 2000 methodologies represent the best science; the current Great Lakes Basin methodologies should be updated using these methods and applied statewide if appropriate
- IDEM and the triennial review workgroup need to review the Purdue fish consumption study and determine a new statewide fish consumption value for use in calculating human health criteria

Wildlife Methodologies

- IDEM currently utilizes two different methodologies for calculating wildlife criteria, one for areas inside the Great Lakes System and another for downstate outside the Great Lakes System

- The downstate methodologies were taken from methods developed by Michigan DEQ and adopted by Indiana in 1990
- The downstate method was basically a reference dose without being modified with exposure assumptions; essentially an incomplete risk equation
- The Great Lakes Guidance methods used a modified human health equation
- Criteria would be calculated for representative species (eagle, kingfisher, herring gull, mink and otter); both a mammalian and avian wildlife value would be calculated and the lower value used as the wildlife criterion
- Great Lakes Guidance method focused on BCCs although Indiana adopted a provision which allowed wildlife criteria to be calculated for other substances if the commissioner determined it was necessary
- A comparison of the Great Lakes Guidance and downstate wildlife methodologies follows:

Issue	Methodology for Outside the Great Lakes System	Methodology for Inside the Great Lakes System
Representative species	doesn't use representative species	Avian: eagle, kingfisher, and herring gull Mammalian: mink and otter
Method to account for net accumulation of substances in fat tissue	Doesn't use either the bioconcentration factor or the bioaccumulation factor	Uses the bioaccumulation factor calculated similarly to BAFs developed under the human health methodologies.
Method for handling insufficient data (Tier II system)	No Tier II system. Downstate wildlife methodologies allow for the use of the no observed adverse effect level, lowest observed adverse effect level or a single rat LD_{50} to calculate a wildlife criterion.	Allows for Tier II values to be calculated if insufficient data are available for Tier I criteria to be calculated and the commissioner determines it to be necessary for the protection of wildlife.
Method to account for net accumulation of substances in fat tissue	Doesn't use either the bioconcentration factor or the bioaccumulation factor	Uses the bioaccumulation factor calculated similarly to BAFs developed under the human health methodologies.
Fish lipid (fat) levels	doesn't account for bioaccumulation	Assumes the animal eats the entire fish. Assumes 6.46% lipid for trophic level three fish and 10.31% lipid for trophic level four fish

- The 1999 draft rules proposed to adopt the Great Lakes System wildlife methodologies statewide with a small modification: the herring gull representative species was eliminated and the ring-billed gull was used instead (herring gulls are not found in areas downstate)
- The wildlife methodologies for areas downstate are flawed and should be replaced; the wildlife methodologies in the Great Lakes System should be adopted statewide as per the 1999 draft rules

Indiana Designated Uses

- 327 IAC 5-2-11.3(a) requires that the state's designated uses must include all existing uses ("In order to achieve this requirement, and consistent with 40 CFR 131.10, water quality standards use designations must include all existing uses").
- State's must adopt water quality criteria to protect those designated uses (40 CFR 131.11)
- Although Indiana has adopted a number of designated uses and criteria to protect those uses, Indiana has adopted criteria and methodologies which do not protect a specific designated use (the criteria protect an existing use which has not been listed as a designated use)
- The following is a list of Indiana's designated uses and the types of criteria to protect those uses:

Designated Use	**Criteria to Protect the Designated Use**
Agricultural use	
Full body contact recreation	*E. coli*, human health nondrinking (incidental ingestion of water during recreation), narratives
Industrial water supply	TDS
Public water supply	Human health drinking water, narratives
Put and take trout fishery/cold water fishery	Aquatic life, more stringent D.O. requirements, pH, ammonia, narratives
Warm water aquatic life	Aquatic life, pH, D.O., ammonia, narratives
Limited use	Aquatic life
???	Human health nondrinking water (consumption of fish)
???	Wildlife (protects wildlife which are dependant on aquatic ecosystems)

- Indiana needs to update its list of designated uses to include the consumption of fish and the protection of wildlife

Surface Water Criteria

- 40 CFR 131.20 requires states to review their water quality standards at least once every three years for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards
- Indiana's surface water criteria for downstate areas have not been updated since 1990; Great Lakes System criteria were adopted in 1997
- Since Indiana last adopted its numeric criteria there have been new data published, new state criteria developed and EPA has released new national criteria
- IDEM needs to work with the triennial review workgroup to evaluate criteria developed by IDEM and EPA to determine what should be included in the state's rules (evaluation/incorporation of new toxicity data may be needed)
- Extensive discussions may be needed on substances that have been proven to be difficult to regulate, such as arsenic and mercury

Article 5 candidate changes that are ready for discussion

Reasonable Potential to Exceed (RPE)

- IDEM needs to develop RPE procedures for the downstate portion of Indiana (the Great Lakes System has procedures adopted in 1997 as a part of the Great Lakes Guidance)
- The Great Lakes System RPE procedure used for monthly averages needs to be reviewed and possibly revised. The existing rules apply the table of multipliers for daily values to the monthly average values. This results in applying a higher than necessary multiplier to the monthly average values.